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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/526,523	03/01/2005	Chung-Kuan Cheng	0321.67590	5310
24978	7590	04/18/2008		
GREER, BURNS & CRAIN 300 S WACKER DR 25TH FLOOR CHICAGO, IL 60606			EXAMINER NGUYEN, THINH T	
			ART UNIT 2818	PAPER NUMBER
			MAIL DATE 04/18/2008	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/526,523

Applicant(s)

CHENG ET AL.

Examiner

THINH T. NGUYEN

Art Unit

2818

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12/27/2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8, 19 and 24-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-8, 24-28, 30 is/are rejected.
- 7) ☒ Claim(s) 4, 19 and 29 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/S508)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. This is in response to Applicant's Amendment filed December 27th 2007

Note that the figures and reference numbers referred to in this Office Action are used merely to indicate an example of a specific teaching and are not to be taken as limiting.

2. Claims 1-8, 19, 24-30 including new claims 24-30 are pending in the Application; Applicant has cancelled claims 9-18 and 20-23.

3. **Applicant's amendments to independent claims 1 and 26 have necessitated new grounds of rejection for claims 1-8,19,24-30 See MPEP § 706.07(a).**

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 30 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 30 is indefinite because of recitation:

--wherein the at least 3 Y's are interconnected by a Y of a next higher level--

Because it is unclear how the at least 3 Y's are interconnected by a Y of a next higher level--

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this office action.

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1, 2, 3, 7-8, 24, 26-28 are rejected under 35 U.S.C. 102(b) as being anticipated by Rostoker et al. (US patent 5,822,214) thereafter Rostoker 214

With regard to claim 1, Rostoker 214 (fig 75) discloses a chip comprising: an array of hexagonal cells; a plurality of interconnects including a plurality of Y's, each of the Y's respectively connecting the cells in clusters of three cells each wherein the cells in the clusters are interconnected.

With regard to claim 2, Rostoker 214 (fig 75) discloses a chip wherein the Y connecting each cluster has a node and three interconnects connecting the node to respective ones of the cells within a cluster;

With regard to claim 3, Rostoker 214 discloses (in the abstract and thorough his disclosures) that his array can be multilevel.

With regard to claim 7 and 8, Rostoker 214 discloses a chip (in fig 75) wherein each of the clusters comprises three cells arranged and routed in three symmetrical directions and

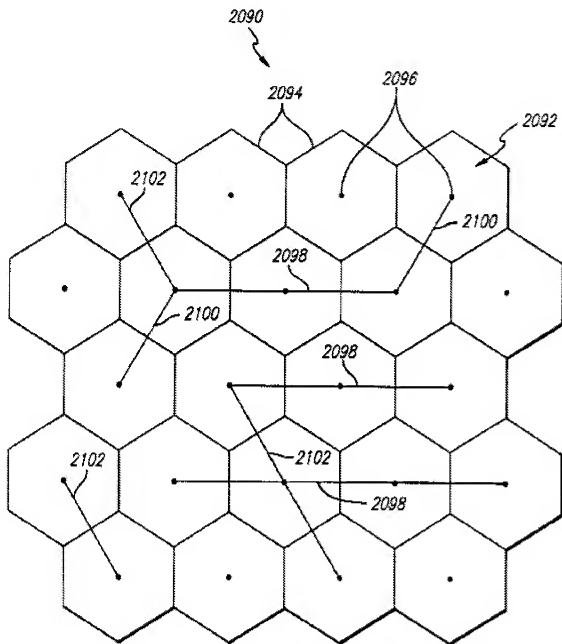
Art Unit: 2818

wherein the cells of each cluster are arranged and routed at directions of 0° , 60° , and 120° with respect to the node.

With regard to claim 24, Rostoker 214 discloses a chip (in fig 75) wherein each of the array of hexagonal cells includes a terminal for connecting to another cell; wherein the Y connecting each cluster includes a node and three interconnects, each of the interconnects respectively connecting the node to a separate terminal in each of the three cells within the cluster; wherein each Y connects each cell of its respective cluster of three cells to the node.

With regard to claim 26, Rostoker 214 discloses a chip (in fig 75) comprising: an array of hexagonal cells; a plurality of interconnects including Y's connecting the cells in clusters of three adjacent cells each, wherein the cells in the clusters are interconnected.

FIG. 75



With regard to claim 27, Rostoker 214 discloses a chip (in fig 75) wherein the Y connecting each cluster has a node and three interconnects connecting the node to respective ones of the cells within a cluster; wherein each Y connects each cell of its respective cell group to the node

With regard to claim 28, Rostoker 214 discloses (in the abstract and thorough his disclosures) that his array can be multilevel.

Claim Rejections - 35 USC § 103

8. The following is a quotation of U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 5, 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rostoker et al. (US patent 5,822,214) thereafter Rostoker 214 in view of Terasawa (Japanese Patent JP357143844A) thereafter Terasawa 844

With regard to claim 5, as set forth in the rejection of claim 1, discloses all the invention except specifically discloses the polygon shape of the LSI chip.
Terasawa, however, discloses (in the abstract) that the chip can be hexagonal.

It would have been obvious to one of ordinary skill in the art the time the invention was made to incorporate this feature as taught by Terasawa into Rostoker 214 device and come up with the invention of claim 5 in order to produce more chips per wafer as taught by Terasawa in his abstract.

With regard to claim 6, the combined disclosures by Rostoker 214 and Terasawa discloses all the invention except for the shape wherein the polygon is symmetrical to directions of the interconnect.

The examiner, however, take official notice that this feature is obvious at the time the invention was made since this shape can be obtained through routine optimization with many optimization program.

8. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rostoker et al. (US patent 5,822,214) thereafter Rostoker 214

With regard to claim 25, as set forth in the rejection of claim 1, Rostoker 214 discloses all the invention except for the limitation wherein said array of hexagonal cells provides a hexagonal flow congestion pattern that does not include the center of the hexagonal pattern.

This limitation, however, is considered obvious since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

ALLOWABLE SUBJECT MATTER

9. Claims 4, 19, 29 are objected as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all the limitations of the base claim and any intervening claim.

Claim 4, 19, 29 are considered allowable since the prior fails to teach the additional limitations:

-- "each of the Y's on a particular level is oriented in a direction that is rotated by 90° from the Y's on a next lower level and is rotated by 90° from the Y's on a next higher level."--
in combination with all other limitations of claim 4, 19, 29.

CONCLUSION

10. THIS ACTION IS MADE FINAL. Applicant's amendments to independent claims 1 and 26 have necessitated new grounds of rejection for claims 1-8, 19, 24-30 and therefore this action is made final. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

Art Unit: 2818

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh T Nguyen whose telephone number is 571-272-1790. The examiner can normally be reached on 9:30 am - 6:30 pm Monday to Friday. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, STEVEN LOKE can be reached on 571-272-1657. The fax phone numbers for the organization where this application or proceeding is assigned is 571-273-8300

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval [PAIR] system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/TTN/

Thanh T Nguyen
Patent Examiner
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/Steven Loke/

Supervisory Patent Examiner, Art Unit 2818

